

WHAT IS CLAIMED IS:

1. A face gear for transmitting power between two shafts which are perpendicular to each other in an offset state comprising:

5 a plurality of tooth portions formed by a numerically controlled milling machine.

2. The face gear according to claim 1, wherein an inclined surface is formed on a reverse side of a surface on which the plurality of tooth portions are formed, and at least a portion of the reverse surface located substantially directly in the rear of the plurality of tooth portions is formed into a flat surface parallel to the surface on which the plurality of tooth portions are formed.

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3. The face gear according to claim 1, wherein the face gear is used in a winding drive mechanism of a fishing reel.

4. A mold for molding a face gear for transmitting power between two shafts which are perpendicular to each other in an offset state comprising:

a portion, for molding a plurality of tooth portions of the face gear, formed by a numerical controlled milling machine.

25 5. The mold according to claim 4, wherein the face gear is

used in a winding drive mechanism of a fishing reel.

6. A mold-fabricating electrode for manufacturing a mold for molding a face gear for transmitting power between two shafts which are perpendicular to each other in an offset state comprising:

a portion, corresponding to a plurality of tooth portions of the face gear, formed by a numerical controlled milling machine.

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7. The mold-fabricating electrode according to claim 6, wherein the face gear is used in a winding drive mechanism of a fishing reel.

15 8. A method of manufacturing a face gear for transmitting power between two shafts which are perpendicular to each other in an offset state, the method comprising a step of:

utilizing a numerical controlled milling machine to form a plurality of tooth portions of the face gear.

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9. The method according to claim 8, wherein the face gear is directly machined by the numerical controlled milling machine to form the plurality of tooth portions.

25 10. The method according to claim 8, wherein the numerical

controlled milling machine machines a mold so as to form a portion for molding the plurality of tooth portions.

11. The method according to claim 8, wherein the numerical
5 controlled milling machine machines a mold-fabricating electrode for manufacturing a mold so as to form a portion corresponding to the plurality of tooth portions.

12. The method according to claim 8, wherein an inclined
10 surface is formed on a reverse surface of a surface on which the plurality of tooth portions are formed, and at least a portion of the reverse surface located substantially directly in the rear of the plurality of tooth portions is formed into a flat surface parallel to the surface on which the plurality
15 of tooth portions are formed.

13. The method according to claim 8, wherein the face gear is used in a winding drive mechanism of a fishing reel.

20 14. The method according to claim 9, wherein the numerical controlled milling machine machines the plurality of tooth portions so as to form a plurality of stepped portions on each of the plurality of tooth portions.

25 15. The method according to claim 14 further comprising the

step of crushing the plurality of stepped portions so as to form a hardened layer.

16. A face gear for transmitting power between two shafts
5 which are perpendicular to each other in an offset state comprising:

a plurality of tooth portions formed on a first surface of the face gear;

an inclined surface formed on a reverse surface of the
10 first surface; and

a flat surface parallel to the first surface which is formed at at least a portion of the reverse surface located substantially directly in the rear of the plurality of tooth portions.

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17. A gear for transmitting winding power provided in a fishing reel comprising:

a plurality of tooth portions formed on the gear; and

a plurality of stepped portions formed on a surface of
20 each of the plurality of tooth portions.

18. The gear according to claim 17, wherein a depth of each of the plurality of stepped portions is 1 to 5 μm .

25 19. The gear according to claim 17, wherein the plurality of

stepped portions are perpendicularly or parallel to on of a direction of a tooth trace and a tooth bearing direction of a gear meshing with the gear.

5 20. The gear according to claim 17, wherein the gear is a face gear provided on a handle shaft in a spinning reel for fishing and meshes with a pinion gear.

21. A gear for transmitting power provided in a winding drive
10 mechanism in a fishing reel comprising:

a plurality of tooth portions formed on the gear; and
a hardened layer formed on a surface of each of the plurality of the gear.

15 22. The gear according to claim 21, wherein the hardened layer is formed by forming a plurality of stepped portions on the surface of each of the plurality of tooth portions and crushing the plurality of stepped portions.

20 23. The gear according to claim 21, wherein the hardened layer includes a chemically or physically generated surface treatment layer.

24. The fishing reel according to claim 21, wherein the gear
25 is a face gear used in the winding drive mechanism.